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October 19, 2001

TO: Catherine Serke, Art Unit 3763

CP2 3D29

FROM: Jeanne Horrigan, EIC-3700 *JH*

SUBJECT: Search Results for Serial #09/161109

Attached are the search results for "Endovascular System for Arresting the Heart," including results of an inventor search in foreign patent databases, and prior art searches in foreign patent and non-patent sci/tech/medical databases.

I tagged the items that seemed to me to be most relevant, but I suggest that you review all of the results.

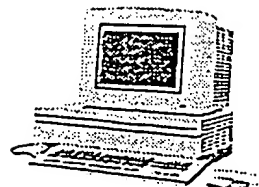
I hope these results are useful. Please let me know if you would like me to expand or modify the search or if you have any questions.

Also attached is a "*Search Results Feedback Form*." Your feedback will help enhance our search services.

# EIC3700/2900

## Search Results

### Feedback Form (Optional)



Scientific & Technical Information Center

The search results generated for your recent request are attached. If you have any questions or comments (compliments or complaints) about the scope or the results of the search, please *contact the EIC searcher who performed your search (or either of us)*:

John Sims, Team Leader, 308-4836, CP2-2C08  
or Jeanne Horrigan, Searcher, 305-5934

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### Voluntary Results Feedback Form

➤ I am an examiner in Workgroup:  Example:

➤ Relevant prior art found, search results used as follows:

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

*Types of relevant prior art found:*

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature  
(journal articles, conference proceedings, new product announcements etc.)

➤ Relevant prior art not found:

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Search results were not useful in determining patentability or understanding the invention.

Other Comments:

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Drop off completed forms in the inbox, EIC 3700/2900, CP2-2C08, or in CPK1-5A02. Thanks!

File 350:Derwent WPIX 1963-2001/UD,UM &UP=200160

File 344:CHINESE PATENTS ABS APR 1985-2001/Aug

File 347:JAPIO OCT 1976-2001/JUN(UPDATED 011001)

File 371:French Patents 1961-2001/BOPI 200141

Set	Items	Description
S1	10	AU="VALLEY K L"
S2	16	AU="SNOW D W"
S3	3	AU="CORVI T C"
S4	1	AU="DONLON B"
S5	1	AU="DONLON B"
S6	10	AU="BOYD S W"
S7	10	AU="FAN S W"
S8	20	AU="ROTH A T"
S9	1	AU="ROTH ALEXANDER"
S10	18	AU="PETERS W S"
S11	19	AU="MUELLER R J"
S12	51	AU="GIFFORD H":AU="GIFFORD H S"
S13	0	S1 AND S2 AND S3 AND S4:S5 AND S6 AND S7 AND S8:S9 AND S10 AND S11 AND S12
S14	113	S1:S12
S15	27	OSTIA
S16	7	S14 AND S15

16/26/5 (Item 5 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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010845124 \*\*Image available\*\*

WPI Acc No: 1996-342077/199634

Delivery of fluid to the coronary sinus - uses a retrograde delivery catheter,  
at a rate of at least 200 ml per min. at a pump pressure less than 300 mm Hg

16/7/1 (Item 1 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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014051354 \*\*Image available\*\*

WPI Acc No: 2001-535567/200159

Endoaortic partitioning catheter for temporarily inducing cardioplegic  
arrest in heart, has inflated balloon which occludes ascending aorta  
between coronary ostia and brachiocephalic artery

Patent Assignee: BOYD S W (BOYD-I); CORVI T C (CORV-I); DONLON B S (DONL-I)  
; FAN S W (FANS-I); GIFFORD H S (GIFF-I); MUELLER R J (MUEL-I); PETERS W  
S (PETE-I); ROTH A T (ROTH-I); SNOW D W (SNOW-I); VALLEY K L (VALL-I)

Inventor: BOYD S W ; CORVI T C ; DONLON B S; FAN S W ; GIFFORD H S ;  
MUELLER R J ; PETERS W S ; ROTH A T ; SNOW D W ; VALLEY K L

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 20010016725	A1	20010823	US 98161109	A	19980925	200159 B

Priority Applications (No Type Date): AU 926170 A 19921203

Patent Details:

Patent No	Kind	Lan Pg	Main IPC	Filing Notes
US 20010016725	A1	65	A61M-037/00	

Abstract (Basic): US 20010016725 A1

NOVELTY - An elongated shaft has a distal end and an inner lumen  
(40). An opening at the distal end is in communication with the lumen.  
An inflated balloon (11) near the distal end occludes the ascending

aorta (12) between coronary ostia and brachiocephalic artery for blocking all systolic and diastolic blood flows. The secondary side of inflated balloon expands larger as compared to primary side.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

- (a) Balloon catheter;
- (b) Method of partitioning patient's ascending aorta between coronary ostia and brachiocephalic artery;
- (c) Cannula adapted to permit passage of a catheter for percutaneous insertion in the body of patient;
- (d) Adapter for proximal attachment to cannula for placement in blood vessel;
- (e) Repositionable securing device for securing elongated medical instrument in selected position.

USE - For cardiac access system for temporarily inducing cardioplegic arrest in the heart of human and other mammalian animals for cardiovascular, pulmonary, neurosurgical and other interventional procedure such as replacement of aortic, mitral, heart valves, repair of septal defects, pulmonary thrombectomy, electrophysiological mapping and ablation, treatment of aneurysms, coronary artery bypass grafting, angioplasty, atherectomy, myocardial drilling, revascularization and neurovascular procedures.

ADVANTAGE - Since the inflated balloon blocks all systolic and diastolic blood flow by occluding ascending aorta, the isolation of heart and coronary arteries from remainder of arterial system, arresting cardiac function and establishing cardiopulmonary bypass are facilitated without the need for a thoracotomy or an external aortic cross clamp and hence allows the heart to be arrested only by applying minimally invasive cardiac procedure.

DESCRIPTION OF DRAWING(S) - The figure shows the cardiac access system employing endoaortic partitioning catheter.

Inflated balloon (11)

Ascending aorta (12)

pp; 65 DwgNo 1/36

Derwent Class: P34; S05

International Patent Class (Main): A61M-037/00

16/7/2 (Item 2 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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012166490 \*\*Image available\*\*

WPI Acc No: 1998-583402/199849

Cardioplegia catheter for inducing cardioplegia arrest - includes occlusion member mounted to shaft distally of opening and configured to occlude ascending aorta between brachiocephalic artery and coronary ostia

Patent Assignee: HEARTPORT INC (HEAR-N)

Inventor: GIFFORD H S ; GRIFFITH B P; ST GOAR F G; STEVENS J H

Number of Countries: 023 Number of Patents: 004

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
WO 9847558	A1	19981029	WO 98US8174	A	19980422	199849 B
AU 9871511	A	19981113	AU 9871511	A	19980422	199913
EP 1011782	A1	20000628	EP 98918616	A	19980422	200035
			WO 98US8174	A	19980422	
US 6090096	A	20000718	US 97839189	A	19970423	200037

Priority Applications (No Type Date): US 97839189 A 19970423

Patent Details:

Patent No Kind Lan Pg Main IPC Filing Notes  
 WO 9847558 A1 E 53 A61M-029/00  
 Designated States (National): AU CA JP  
 Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LU  
 MC NL PT SE  
 AU 9871511 A A61M-029/00 Based on patent WO 9847558  
 EP 1011782 A1 E A61M-029/00 Based on patent WO 9847558  
 Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LI  
 LU MC NL PT SE  
 US 6090096 A A61M-031/00  
 Abstract (Basic): WO 9847558 A

The cardioplegia catheter comprises a shaft with distal and proximal ends, an opening near the distal end, a port at the proximal end, and an inner lumen fluidly connecting the port and the opening. A distal portion of the shaft is configured to extend into the ascending aorta with a proximal portion of the shaft extending into a left chamber of the heart through the aortic valve and out of the heart through a penetration in a wall of it.

An occlusion member is mounted to the shaft distally of the opening and configured to occlude the ascending aorta between the brachiocephalic artery and the coronary ostia .

ADVANTAGE - Maintains circulation of oxygenated blood which do not require median sternotomy or other gross thoracotomy and eliminates the need for aortic cross-clamping.

Dwg.1/18

Derwent Class: P34

International Patent Class (Main): A61M-029/00; A61M-031/00

16/7/3 (Item 3 from file: 350)  
 DIALOG(R)File 350:Derwent WPIX  
 (c) 2001 Derwent Info Ltd. All rts. reserv.  
 012124688 \*\*Image available\*\*  
 WPI Acc No: 1998-541600/199846

Endovascular system for arresting the heart - has catheter with expandable balloon to occlude aortic lumen in ascending aorta with steerable tip and curved shaft configuration

Patent Assignee: HEARTPORT INC (HEAR-N)

Inventor: BOYD S W ; CORVI T C ; DONLON B S ; FAN S W ; GIFFORD H S ;  
 MUELLER R J ; PETERS W S ; ROTH A T ; SNOW D W ; VALLEY K L

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5814016	A	19980929	US 91730559	A	19910716	199846 B
			US 92991188	A	19921215	
			US 9323778	A	19930222	
			US 93123411	A	19930917	
			US 93159815	A	19931130	
			US 93162742	A	19931203	
			US 93163241	A	19931206	
			US 94213760	A	19940316	
			US 94281962	A	19940728	
			US 94281981	A	19940728	
			US 94282192	A	19940728	
			US 95486216	A	19950607	
			US 97797229	A	19970207	

Priority Applications (No Type Date): US 94282192 A 19940728; US 91730559 A

19910716; US 92991188 A 19921215; US 9323778 A 19930222; US 93123411 A 19930917; US 93159815 A 19931130; US 93162742 A 19931203; US 93163241 A 19931206; US 94213760 A 19940316; US 94281962 A 19940728; US 94281981 A 19940728; US 95486216 A 19950607; US 97797229 A 19970207

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5814016	A		60	A61M-029/00	Cont of application US 91730559 Cont of application US 92991188 CIP of application US 9323778 Cont of application US 93123411 CIP of application US 93159815 Cont of application US 93162742 CIP of application US 93163241 CIP of application US 94213760 CIP of application US 94281962 CIP of application US 94281981 Cont of application US 94282192 Div ex application US 95486216 Cont of patent US 5370685 CIP of patent US 5433700 CIP of patent US 5452733 CIP of patent US 5458574 CIP of patent US 5571215 Cont of patent US 5584803

Abstract (Basic): US 5814016 A

The system includes an endoaortic partitioning catheter (10) having an expandable balloon (11) at its distal end which is expanded within the ascending aorta (12) to occlude the aortic lumen between the coronary ostia and the brachiocephalic artery. Specially curved shaft configurations, eccentric or shaped occlusion balloons and a steerable catheter tip may be used separately or in combination to center the tip within the ascending aorta.

The shaft (39) of the catheter has a coaxial or multilumen construction (40, 43). The catheter may further include piezoelectric pressure transducers at the distal tip of the catheter and within the occlusion balloon. Nonfluoroscopic placement of the catheter is facilitated by fiberoptic transillumination of the aorta and a secondary balloon at the distal tip (41) of the catheter for atraumatically contacting the aortic valve. The system further includes a dual purpose arterial bypass cannula and introducer sheath for introducing the catheter into a peripheral artery of the patient.

ADVANTAGE - Allows effective ascending aortic occlusion, ardioplegia, venting, right heart deflation and topical cooling in association with extracorporeal cardiopulmonary bypass all without necessitating a median sternotomy or other thoracic incision.

Dwg.2, 3/36

Derwent Class: P34

International Patent Class (Main): A61M-029/00

16/7/4 (Item 4 from file: 350)

DIALOG(R) File 350:Derwent WPIX

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011074031 \*\*Image available\*\*

WPI Acc No: 1997-051955/199705

Catheter device for partitioning patient's ascending aorta between coronary ostia and brachiocephalic artery - has elongated shaft having inner lumen, opening at distal end in fluid communication with first

inner lumen, and expandable device first inner lumen for occluding ascending aorta between coronary ostia and brachiocephalic artery

Patent Assignee: HEARTPORT INC (HEAR-N)

Inventor: BOYD S W ; CORVI T C ; DONLON B S ; FAN S W ; GIFFORD H S ;

MUELLER R J ; PETERS W S ; ROTH A T ; SNOW D W ; VALLEY K L

Number of Countries: 022 Number of Patents: 006

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
WO 9640347	A1	19961219	WO 96US8078	A	19960530	199705 B
AU 9659565	A	19961230	AU 9659565	A	19960530	199716
EP 836501	A1	19980422	EP 96916816	A	19960530	199820
			WO 96US8078	A	19960530	
US 5766151	A	19980616	US 91730559	A	19910716	199831
			US 92991188	A	19921215	
			US 9323778	A	19930222	
			US 93123411	A	19930917	
			US 93159815	A	19931130	
			US 93162742	A	19931203	
			US 93163241	A	19931206	
			US 94213760	A	19940316	
			US 94281891	A	19940728	
			US 94281962	A	19940728	
			US 94282192	A	19940728	
			US 95486216	A	19950607	
AU 723379	B	20000824	AU 9659565	A	19960530	200045
AU 200071817	A	20010208	AU 9659565	A	19960530	200113 N
			AU 200071817	A	20001124	

Priority Applications (No Type Date): US 95486216 A 19950607; US 91730559 A 19910716; US 92991188 A 19921215; US 9323778 A 19930222; US 93123411 A 19930917; US 93159815 A 19931130; US 93162742 A 19931203; US 93163241 A 19931206; US 94213760 A 19940316; US 94281891 A 19940728; US 94281962 A 19940728; US 94282192 A 19940728; AU 200071817 A 20001124

Cited Patents: 1.Jnl.Ref; US 4531936; US 4785795; US 4921478; US 5104377; US 5120323; US 5224933; US 5312343; US 5312355; US 5328468; US 5338314; US 5395330; US 5395332; US 5395352; US 5417657; US 5423763; US 5453076; US 5478309

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
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WO 9640347	A1	E	141	A61M-029/00	
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Designated States (National): AU CA JP

Designated States (Regional): AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE

AU 9659565	A				Based on patent WO 9640347
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EP 836501	A1	E			Based on patent WO 9640347
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Designated States (Regional): AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

US 5766151	A				CIP of application US 91730559
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CIP of application US 92991188

CIP of application US 9323778

CIP of application US 93123411

CIP of application US 93159815

CIP of application US 93162742

CIP of application US 93163241

CIP of application US 94213760

CIP of application US 94281891

CIP of application US 94281962

CIP of application US 94282192



			CIP of patent US 5370685
			CIP of patent US 5433700
			CIP of patent US 5452733
			CIP of patent US 5458574
			CIP of patent US 5571215
			CIP of patent US 5584803
AU 723379	B	A61M-029/00	Previous Publ. patent AU 9659565
			Based on patent WO 9640347
AU 200071817	A	A61M-029/00	Div ex application AU 9659565
			Div ex patent AU 723379

Abstract (Basic): WO 9640347 A

The catheter device comprises an elongated shaft having a distal end, a proximal end, a first inner lumen extending between them. An opening at the distal end is in fluid communication with the first inner lumen. An expandable member near the distal end of the shaft proximal to the opening in the first inner lumen for occluding the ascending aorta between the coronary ostia and the brachiocephalic artery so as to block all systolic and diastolic blood flow through them.

The expandable member is expandable eccentrically such that expandable member has a first side and a second side. The first side expands to a larger size than the second side.

USE/ADVANTAGE - For temporary inducing cardioplegia arrest in heart of patient and for establishing cardio-pulmonary bypass. Patient's heart can be arrested and patient placed on cardiopulmonary bypass without a conventional gross thoracotomy, thereby reducing mortality and morbidity.

Dwg. 1/36

Derwent Class: P34

International Patent Class (Main): A61M-029/00

16/7/6 (Item 6 from file: 350)  
DIALOG(R)File 350:Derwent WPIX  
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010789988 \*\*Image available\*\*  
WPI Acc No: 1996-286941/199629

Method for inducing cardioplepic arrest in heart of patient - involves use of single perfusion catheter with multiple distal branches for engaging coronary ostia

Patent Assignee: HEARTPORT INC (HEAR-N)

Inventor: ADAMS C L; BOYD S W ; EVARD P C; MUELLER R L; PETERS W S ; ST

GOAR F G; STEVENS J H; GIFFORD H S ; STERMAN W D; MACHOLD T R

Number of Countries: 021 Number of Patents: 010

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 9617644	A1	19960613	WO 95US15014	A	19951121	199629	B
AU 9642847	A	19960626	AU 9642847	A	19951121	199641	
US 5695457	A	19971209	US 94282192	A	19940728	199804	
			US 94351850	A	19941207		
EP 841963	A1	19980520	EP 95941419	A	19951121	199824	
			WO 95US15014	A	19951121		
US 5769812	A	19980623	US 91730559	A	19910716	199832	N
			US 92991188	A	19921215		
			US 93123411	A	19930917		
			US 93162742	A	19931203		
			US 94282192	A	19940728		
			US 95453426	A	19950530		

US 5792094	A	19980811	US 96732076	A	19961016	
			US 91730559	A	19910716	199839 N
			US 92991188	A	19921215	
			US 93123411	A	19930917	
			US 93162742	A	19931203	
			US 94282192	A	19940728	
			US 95535676	A	19950928	
US 5807318	A	19980915	US 94282192	A	19940728	199844
			US 94351850	A	19941207	
			US 96615152	A	19960312	
AU 696812	B	19980917	AU 9642847	A	19951121	199849
JP 10510178	W	19981006	WO 95US15014	A	19951121	199850
			JP 96517603	A	19951121	
US 20010023334	A1	20010920	US 94351850	A	19941207	200156
			US 96615152	A	19960312	
			US 98151582	A	19980911	
			US 2001863135	A	20010522	

Priority Applications (No Type Date): US 94351850 A 19941207; US 94282192 A 19940728; US 96732076 A 19961016; US 95535676 A 19950928; US 96615152 A 19960312; US 98151582 A 19980911; US 2001863135 A 20010522

Cited Patents: US 4248224; US 4712551; US 4714460; US 4804359; US 5011469; US 5195942; US 5433700; US 5451207; US 5458574; US 5478309

#### Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
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WO 9617644	A1	E	57	A61M-029/00	
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Designated States (National): AU CA JP

Designated States (Regional): AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE

AU 9642847	A				Based on patent WO 9617644
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US 5695457	A		23	A61M-037/00	CIP of application US 94282192
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CIP of patent US 5584803

EP 841963	A1	E			Based on patent WO 9617644
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Designated States (Regional): AT BE CH DE DK ES FR GB GR IE IT LI LU MC NL PT SE

US 5769812	A			A61M-037/00	CIP of application US 91730559
					CIP of application US 92991188
					CIP of application US 93123411
					CIP of application US 93162742
					Div ex application US 94282192
					Cont of application US 95453426
					CIP of patent US 5370685
					Div ex patent US 5584803

US 5792094	A			A61M-037/00	CIP of application US 91730559
					CIP of application US 92991188
					CIP of application US 93123411
					CIP of application US 93162742
					Div ex application US 94282192
					CIP of patent US 5370685
					Div ex patent US 5584803

US 5807318	A			A61M-001/00	CIP of application US 94282192
					Div ex application US 94351850
					CIP of patent US 5584803

AU 696812	B				Previous Publ. patent AU 9642847
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Based on patent WO 9617644

JP 10510178	W		53	A61M-025/00	Based on patent WO 9617644
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US 20010023334	A1			A61M-029/00	Div ex application US 94351850
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Div ex application US 96615152

Cont of application US 98151582  
Div ex patent US 5695457  
Div ex patent US 5807318

Abstract (Basic): WO 9617644 A

The method comprises the steps of introducing at least one distal end of at least one perfusion catheter into a peripheral artery of the patient. It involves advancing the distal end of the perfusion catheter from the peripheral artery into at least one coronary ostium communicating with the coronary vasculature of the patient. It then involves the steps of occluding the coronary ostium with an occlusion device proximate the distal end of the perfusion catheter. It then involves arresting the heart.

The fourth step comprises the substep of infusing a cardioplegic agent through a lumen of the perfusion catheter into the coronary vasculature downstream of the occlusion device.

ADVANTAGE - Avoids the need for grossly invasive surgical access to the heart.

Dwg.1A/11

Abstract (Equivalent): US 5695457 A

The method comprises the steps of introducing at least one distal end of at least one perfusion catheter into a peripheral artery of the patient. It involves advancing the distal end of the perfusion catheter from the peripheral artery into at least one coronary ostium communicating with the coronary vasculature of the patient. It then involves the steps of occluding the coronary ostium with an occlusion device proximate the distal end of the perfusion catheter. It then involves arresting the heart.

The fourth step comprises the substep of infusing a cardioplegic agent through a lumen of the perfusion catheter into the coronary vasculature downstream of the occlusion device.

ADVANTAGE - Avoids the need for grossly invasive surgical access to the heart.

Dwg.1A/11

Derwent Class: P31; P34

International Patent Class (Main): A61M-001/00; A61M-025/00; A61M-029/00; A61M-037/00

International Patent Class (Additional): A61B-019/00; A61M-031/00

16/7/7 (Item 7 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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010313904 \*\*Image available\*\*

WPI Acc No: 1995-215162/199528

Cardio-pulmonary by-pass system for closed chest intervention - uses expandable balloon to block blood flow through ascending aorta for number of cardiac cycles and blood flow lumen to receive deoxygenated blood from venous system

Patent Assignee: HEARTPORT INC (HEAR-N); STANFORD SURGICAL TECHNOLOGIES INC (STAN-N)

Inventor: GIFFORD H S ; MACHOLD T R; STERMAN W D; STEVENS J H

Number of Countries: 020 Number of Patents: 008

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
WO 9515192	A1	19950608	WO 94US12986	A	19941110	199528 B
AU 9511759	A	19950619	AU 9511759	A	19941110	199540
EP 731720	A1	19960918	WO 94US12986	A	19941110	199642
			EP 95902513	A	19941110	
EP 731720	A4	19970618	EP 95902513	A		199746

JP 9509074	W	19970916	WO 94US12986	A	19941110	199747
			JP 95515621	A	19941110	
AU 691854	B	19980528	AU 9511759	A	19941110	199833
AU 9886130	A	20000323	AU 9511759	A	19941110	200025
			AU 9886130	A	19980921	
EP 1129744	A1	20010905	EP 95902513	A	19941110	200151
			EP 2001112373	A	19941110	

Priority Applications (No Type Date): US 93162742 A 19931203

Cited Patents: US 5011469; US 5195942; No-Citns.

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing	Notes
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WO 9515192	A1	E	70	A61M-037/00		
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Designated States (National): AU CA JP

Designated States (Regional): AT BE CH DE DK ES FR GB GR IE IT LI LU MC NL PT SE

AU 9511759	A				Based on patent WO 9515192
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EP 731720	A1	E	70		Based on patent WO 9515192
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Designated States (Regional): AT BE CH DE DK ES FR GB GR IE IT LI LU MC NL PT SE

JP 9509074	W		69	A61M-001/14	Based on patent WO 9515192
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AU 691854	B			A61M-001/36	Previous Publ. patent AU 9511759
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Based on patent WO 9515192

AU 9886130	A			A61M-001/36	Div ex application AU 9511759
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Div ex patent AU 691854

EP 1129744	A1	E		A61M-025/00	Div ex application EP 95902513
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Div ex patent EP 731720

Designated States (Regional): AT BE CH DE DK ES FR GB GR IE IT LI LU MC NL PT SE

Abstract (Basic): WO 9515192 A

The system includes a by-pass cannula (180) configured for insertion into a patient's artery which includes a blood flow lumen (188) which may be connected to a cardio-pulmonary by-pass system (92,94,96,100). A catheter shaft (202) is coupled to the by-pass cannula, usually within the blood flow lumen, and has a member (216) at its distal end for performing an interventional procedure within the heart.

The catheter shaft may have an expandable member e.g an inflatable balloon disposed near to the distal end for occluding the ascending aorta so as to block all blood flow through the aorta for a number of cardiac cycles. The catheter shaft has an inner lumen (212) through which cardio-plegic fluid may be delivered upstream of the occluding member to infuse cardio-plegic fluid into the coronary arteries for arresting the heart. The blood flow lumen in the by-pass cannula is connected to a cardio-pulmonary by-pass system, which receives deoxygenated blood from the patient's venous system, oxygenates the blood and delivers the oxygenated blood to the patient's arterial system through the blood flow lumen.

USE/ADVANTAGE - Partitioning patient's ascending aorta between coronary ostia and brachycephalic artery and infusing oxygenated blood into patient's arterial system. Minimises arterial and venous penetrations and associated trauma to patient.

Dwg.16/16

Derwent Class: P31; P34; S05

International Patent Class (Main): A61M-001/14; A61M-001/36; A61M-025/00; A61M-037/00

International Patent Class (Additional): A61B-017/00; A61M-001/10; A61M-025/10

File 348:EUROPEAN PATENTS 1978-2001/Oct W02

File 349:PCT Fulltext 1983-2001/UB=20011018,UT=20011011

Set	Items	Description
S1	4	PN=AU 200071817 + PN=AU 691854 + PN=AU 696812 + PN=AU 7092-59 + PN=AU 723379 + PN=AU 9511759 + PN=AU 9642847 + PN=AU 964-4690 + PN=AU 9659565 + PN=AU 9871511 + PN=AU 9886130 + PN=EP -1011782 + PN=EP 1129744 + PN=EP 731720 + PN=EP 805701
S2	2	PN=EP 836501 + PN=EP 841963 + PN=JP 10510178 + PN=JP 10512-163 + PN=JP 9509074 + PN=US 20010016725 + PN=US 20010023334 + PN=US 5558644 + PN=US 5584803 + PN=US 5695457 + PN=US 5702368 + PN=US 5738652 + PN=US 5766151 + PN=US 5769812
S3	10	PN=US 5792094 + PN=US 5807318 + PN=US 5814016 + PN=US 5913-842 + PN=US 6090096 + PN=WO 9515192 + PN=WO 9617644 + PN=WO 9-621489 + PN=WO 9640347 + PN=WO 9847558
S4	11	S1:S3
S5	7	AU="VALLEY KIRSTEN L":AU="VALLEY KIRSTEN LEE"
S6	11	AU="SNOW DAVID W"
S7	2	AU="CORVI TIMOTHY C"
S8	23	AU="DONLON BRIAN S":AU="DONLON BRIAN S"
S9	15	AU="BOYD STEPHEN W":AU="BOYD STEVEN"
S10	10	AU="FAN SYLVIA W":AU="FAN SYLVIA WEN-CHIN"
S11	20	AU="ROTH ALEX":AU="ROTH ALEXANDER"
S12	18	AU="PETERS WILLIAM S":AU="PETERS WILLIAMS S"
S13	4	AU="MUELLER RICHARD J":AU="MUELLER RICHARD J JR"
S14	7	AU="MUELLER RICHARD"
S15	54	AU="GIFFORD HANSEN S III":AU="GIFFORD HANSON SMILEY III"
S16	1	AU="GIFFORD III HANSON SMILEY"
S17	2	S5 AND S6 AND S7 AND S8 AND S9 AND S10 AND S11 AND S12 AND S13:S14 AND S15:S16
S18	2	S4 AND S17
S19	103	S5:S16 NOT S4
S20	0	S OSTIA
S21	199	OSTIA
S22	14	S19 AND S21
S23	14	IDPAT (sorted in duplicate/non-duplicate order)
S24	14	S23 NOT S4
S25	14	IDPAT (sorted in duplicate/non-duplicate order)
S26	14	IDPAT (primary/non-duplicate records only)

17/3,AB/1

DIALOG(R)File 348:EUROPEAN PATENTS

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00828193

ENDOVASCULAR SYSTEM FOR ARRESTING THE HEART

ENDOVASKULARES SYSTEM ZUR ERZEUGUNG EINES HERSTILLSTEMDES

SYSTEME ENDOVASCULAIRE D'ARRET DU COEUR

PATENT ASSIGNEE:

HEARTPORT, INC., (2074210), 200 Chesapeake Drive, Redwood City,  
California 94063, (US), (applicant designated states:  
AT;BE;CH;DE;DK;ES;FI;FR;GB;GR;IE;IT;LI;LU;MC;NL;PT;SE)

INVENTOR:

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LEGAL REPRESENTATIVE:  
Harrison, David Christopher et al (31532), MEWBURN ELLIS York House 23  
Kingsway, London WC2B 6HP, (GB)  
PATENT (CC, No, Kind, Date): EP 836501 A1 980422 (Basic)  
WO 9640347 961219  
APPLICATION (CC, No, Date): EP 96916816 960530; WO 96US8078 960530  
PRIORITY (CC, No, Date): US 486216 950607  
DESIGNATED STATES: AT; BE; CH; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU;  
MC; NL; PT; SE  
INTERNATIONAL PATENT CLASS: A61M-029/00; A61M-025/10; A61M-025/01; A61M-025/02;  
NOTE: No A-document published by EPO  
LANGUAGE (Publication,Procedural,Application): English; English; English

17/3,AB/2

DIALOG(R)File 349:PCT Fulltext

(c) 2001 WIPO/Univentio. All rts. reserv.  
00357833

ENDOVASCULAR SYSTEM FOR ARRESTING THE HEART

SYSTEME ENDOVASCULAIRE D'ARRET DU COEUR

Patent Applicant/Assignee: HEARTPORT INC,

Inventor(s):

VALLEY Kirsten L,  
SNOW David W,  
CORVI Timothy C,  
DONLON Brian S,  
BOYD Stephen W,  
FAN Sylvia W,  
ROTH Alex T,  
PETERS William S,  
MUELLER Richard J Jr,  
GIFFORD Hanson S III,

Patent and Priority Information (Country, Number, Date):

Patent: WO 9640347 A1 19961219  
Application: WO 96US8078 19960530 (PCT/WO US9608078)  
Priority Application: US 95486216 19950607

Designated States: AU CA JP AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE

Publication Language: English

Fulltext Word Count: 23018

English Abstract

Devices and methods are provided for temporarily inducing cardio-plegia arrest in the heart of a patient, and for establishing cardiopulmonary bypass in order to facilitate surgical procedures on the heart and its related blood vessels. Specifically, a catheterbased system is provided for isolating the heart and coronary blood vessels of a patient from the remainder of the arterial system(850), and for infusing a cardio-plegia agent into the patient's coronary arteries to induce cardio-plegia arrest in the heart. The system includes an endo-aortic partitioning catheter (10) having an expandable balloon (11, 161) at its distal end, which is expanded within the ascending aorta (12, 157) to occlude the aortic lumen between the coronary ostia and the brachio-cephalic artery. Means for centering the catheter tip (330) within the ascending aorta include

*duplicate of patent 17/3, AB/1, page 10*

specially curved shaft configurations (1600), eccentric (710) or shaped (792) occlusion balloons (161, 350), and a steerable catheter tip (145) which may be used separately or in combination. The shaft of the catheter may have a coaxial (106) or multilumen (602) construction.

26/TI/1 (Item 1 from file: 349)

DIALOG(R)File 349:(c) 2001 WIPO/Univentio. All rts. reserv.  
METHODS AND DEVICES FOR IMPLANTING CARDIAC VALVES

26/TI/2 (Item 2 from file: 349)

DIALOG(R)File 349:(c) 2001 WIPO/Univentio. All rts. reserv.  
METHODS AND APPARATUS FOR PERFUSION OF ISOLATED TISSUE STRUCTURE

26/TI/3 (Item 3 from file: 349)

DIALOG(R)File 349:(c) 2001 WIPO/Univentio. All rts. reserv.  
METHOD AND APPARATUS FOR DELIVERY OF THERAPEUTIC AGENTS TO THE HEART

26/TI/4 (Item 4 from file: 349)

DIALOG(R)File 349:(c) 2001 WIPO/Univentio. All rts. reserv.  
SURGICAL SYSTEM AND PROCEDURE FOR TREATMENT OF MEDICALLY REFRACTORY ATRIAL FIBRILLATION

26/TI/5 (Item 5 from file: 349)

DIALOG(R)File 349:(c) 2001 WIPO/Univentio. All rts. reserv.  
MINIMALLY-INVASIVE DEVICES AND METHODS FOR TREATMENT OF CONGESTIVE HEART FAILURE

26/TI/6 (Item 6 from file: 349)

DIALOG(R)File 349:(c) 2001 WIPO/Univentio. All rts. reserv.  
LESS-INVASIVE DEVICES AND METHODS FOR CARDIAC VALVE SURGERY

26/TI/7 (Item 7 from file: 349)

DIALOG(R)File 349:(c) 2001 WIPO/Univentio. All rts. reserv.  
METHOD AND APPARATUS FOR MINIMIZING THE RISK OF AIR EMBOLISM IN THE THORACIC CAVITY

26/TI/8 (Item 8 from file: 349)

DIALOG(R)File 349:(c) 2001 WIPO/Univentio. All rts. reserv.  
METHODS AND APPARATUS FOR ANCHORING AN OCCLUDING MEMBER

26/TI/9 (Item 9 from file: 349)

DIALOG(R)File 349:(c) 2001 WIPO/Univentio. All rts. reserv.  
CLAMP ASSEMBLY AND METHOD OF USE

26/TI/10 (Item 10 from file: 349)

DIALOG(R)File 349:(c) 2001 WIPO/Univentio. All rts. reserv.  
DEVICES AND METHODS FOR PORT-ACCESS MULTIVESSEL CORONARY ARTERY BYPASS SURGERY

26/TI/11 (Item 11 from file: 349)

DIALOG(R)File 349:(c) 2001 WIPO/Univentio. All rts. reserv.  
ENDOVASCULAR CARDIAC VENTING CATHETER AND METHOD

26/TI/14 (Item 14 from file: 349)

DIALOG(R)File 349:(c) 2001 WIPO/Univentio. All rts. reserv.  
DEVICES AND METHODS FOR INTRACARDIAC PROCEDURES

26/3,AB/12 (Item 12 from file: 349)

DIALOG(R)File 349:PCT Fulltext

(c) 2001 WIPO/Univentio. All rts. reserv.

00347559

SYSTEM AND METHODS FOR PERFORMING ENDOVASCULAR PROCEDURES

SYSTEME ET PROCEDES POUR EFFECTUER DES ACTES ENDOVASCULAIRES

Patent Applicant/Assignee: HEARTPORT INC,

Inventor(s):

STEVENS John H,  
PETERS William S ,  
STERMAN Wesley D,  
GIFFORD Hansen S III

Patent and Priority Information (Country, Number, Date):

Patent: WO 9630072 A1 19961003

Application: WO 96US3266 19960311 (PCT/WO US9603266)

Priority Application: US 95415366 19950330

Designated States: AU CA JP AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE

Publication Language: English

Fulltext Word Count: 18148

English Abstract

This invention is a system for inducing cardio-plegia arrest and performing an endovascular procedure within the heart or blood vessels of a patient. An endo-aortic partitioning catheter (10) has an inflatable balloon (11) which occludes the ascending aorta (12) when inflated. Cardio-plegia fluid may be infused through a lumen of the endo-aortic partitioning catheter (39) to stop the heart while the patient's circulatory system is supported on cardiopulmonary bypass. One or more endovascular devices (500) are introduced through an internal lumen (40) of the endo-aortic partitioning catheter (30) to perform a diagnostic or therapeutic endovascular procedure within the heart or blood vessels of the patient. Surgical procedures such as coronary artery bypass surgery or heart valve replacement may be performed in conjunction with the endovascular procedure while the heart is stopped. Embodiments of the system are described for performing, e.g., fiberoptic angioscopy of structures within the heart and its blood vessels, and valvuloplasty for correction of valvular stenosis.

26/3,AB/13 (Item 13 from file: 349)

DIALOG(R)File 349:PCT Fulltext

(c) 2001 WIPO/Univentio. All rts. reserv.

00299768

THORACOSCOPIC DEVICES AND METHODS FOR ARRESTING THE HEART

DISPOSITIFS ET METHODES DE THORACOSCOPIE POUR ARRETER LE COEUR

Patent Applicant/Assignee: STANFORD SURGICAL TECHNOLOGIES INC,

Inventor(s):

EVARD Philip C,  
MACHOLD Timothy R,  
Gifford Hanson S III ,  
ROTH Alex T ,  
STERMAN Wesley D,  
SIEGEL Lawrence C

Patent and Priority Information (Country, Number, Date):

Patent: WO 9517919 A1 19950706

Application: WO 94US14197 19941208 (PCT/WO US9414197)

Priority Application: US 93173899 19931227

Designated States: AU CA JP AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE

Publication Language: English

Fulltext Word Count: 10470



#### English Abstract

The invention provides devices and methods for thoracoscopically arresting the heart and establishing cardiopulmonary bypass, thus facilitating a variety of less invasive surgical procedures on and within the heart and great vessels of the thorax. In one embodiment, the invention provides a thoroscopic system for arresting a patient's heart including a clamp (32) configured for introduction into the patient's thoracic cavity through a percutaneous intercostal penetration in the patient's chest. The clamp is positionable about the patient's ascending aorta between the coronary arteries and the brachio-cephalic artery. The clamp (32) is coupled to the distal end of an elongated handle means (36) for manipulating the clamp (32) from a location outside of the patient's thoracic cavity. A means for actuating the clamp (36) is coupled to the proximal end (23) of the handle means (36). When actuated, the clamp (32) blocks blood flow through the ascending aorta. A delivery cannula (44) may be used to deliver cardio-plegic fluid into the ascending aorta upstream from the clamp (32) to arrest cardiac function.

File 155:MEDLINE(R) 1966-2001/Nov W2  
 File 144:Pascal 1973-2001/Oct W2  
 File 5:Biosis Previews(R) 1969-2001/Oct W2  
 File 6:NTIS 1964-2001/Oct W4  
 File 2:INSPEC 1969-2001/Oct W2  
 File 8:Ei Compendex(R) 1970-2001/Oct W2  
 File 99:Wilson Appl. Sci & Tech Abs 1983-2001/Sep  
 File 65:Inside Conferences 1993-2001/Oct W2  
 File 77:Conference Papers Index 1973-2001/Sep  
 File 73:EMBASE 1974-2001/Oct W2  
 File 34:SciSearch(R) Cited Ref Sci 1990-2001/Oct W3  
 File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec  
 File 94:JICST-EPlus 1985-2001/Sep W3  
 File 35:Dissertation Abs Online 1861-2001/Oct

Set	Items	Description
S1	144683	BALLOON
S2	18532	ASCENDING()AORTA
S3	47968	OSTIA OR OSTIUM OR ORIFICE
S4	1793145	CARDIAC? OR CORONARY
S5	52778	BRACHIAL OR BRACHIOCEPHALIC
S6	1136146	ARTERY
S7	1848	S3(N)S4
S8	13807	S5()S6
S9	1572518	OCCLUD? OR BLOCK? ? OR BLOCKED OR BLOCKING OR OBSTRUCT? ? - OR OBSTRUCTED OR OBSTRUCTING OR PLUG? ? OR PLUGG?
S10	0	S1 AND S2 AND S7 AND S8
S11	764	S1 AND S2
S12	126	S3 AND S5
S13	0	S11 AND S12
S14	574429	AORT?
S15	1538	S9(3W)S14
S16	23	S11 AND S15
<b>S17</b>	<b>18</b>	<b>RD (unique items)</b>
S18	5	AU="VALLEY K L"
S19	4	AU="VALLEY KIRSTEN L":AU="VALLEY KL"
S20	74	AU="SNOW D W"
S21	5	AU="SNOW DAVID W"
S22	19	AU="SNOW DW"
S23	3	AU="DONLON B S"
S24	1	AU="DONLON B.S."
S25	7	AU="DONLON BRIAN S"
S26	2	AU="DONLON BS"
S27	2	AU="BOYD S W"
S28	1	AU="BOYD S.W."
S29	4	AU="BOYD STEPHEN W"
S30	4	AU="FAN S W"
S31	1	AU="FAN S.W."
S32	3	AU="FAN SYLVIA W"
S33	4	AU="ROTH A T"
S34	1	AU="ROTH A.T."
S35	5	AU="ROTH ALEX T"
S36	36	AU="PETERS W S"
S37	16	AU="PETERS W.S."
S38	15	AU="PETERS WILLIAM S"
S39	53	AU="PETERS WS"
S40	11	AU="MILLER R J JR"
S41	2	AU="MUELLER RICHARD J"

S42 7 AU="GIFFORD H S":AU="GIFFORD H S III"  
 S43 11 AU="GIFFORD HANSON S":AU="GIFFORD HANSON S III"  
 S44 1 AU="GIFFORD HS"  
 S45 4 AU="VALLEY, K. L.":AU="VALLEY, K.L."  
 S46 74 AU="SNOW D W"  
 S47 6 AU="SNOW, D. W."  
 S48 4 AU="SNOW, D.W."  
 S49 1 AU="SNOW, DAVID W."  
 S50 2 AU="DONLON, B. S.":AU="DONLON, B.S."  
 S51 3 AU="BOYD, S. W."  
 S52 1 AU="BOYD, S.W."  
 S53 2 AU="BOYD, STEPHEN WILLIAM"  
 S54 3 AU="FAN, S.W."  
 S55 7 AU="PETERS, W. S."  
 S56 3 AU="PETERS, W.S."  
 S57 3 AU="PETERS, WILLIAM S.":AU="PETERS, WILLIAM STANLEY"  
 S58 23 AU="MUELLER, R.J."  
 S59 6 AU="MUELLER, R. J."  
 S60 4 AU="MUELLER, RICHARD J.":AU="MUELLER, RICHARD JUDD"  
 S61 1 AU="GIFFORD, H.S."  
 S62 355 S18:S61  
 S63 13 S1 AND S3 AND S5  
 S64 0 S62 AND S63  
 S65 42 S1 AND S62  
 S66 16 RD (unique items)  
 S67 13 S63 NOT S66  
 S68 9 RD (unique items)

17/6/1 (Item 1 from file: 155)

09357044 97312921 PMID: 9169362

Port-access bilateral internal mammary artery grafting for left main coronary artery disease: canine feasibility study.  
Jan-Feb 1997

17/6/2 (Item 2 from file: 155)

07303633 91097838 PMID: 2268441

Myocardial protection by simple systemic hypothermia without aortic occlusion.  
1990

17/6/4 (Item 4 from file: 155)

04146586 80222701 PMID: 7388858

The arterial system characterised in the time domain.  
May 1980

17/6/5 (Item 5 from file: 155)

03450973 77011238 PMID: 967076

The Windkesselventricle with guiding balloon as a new approach for assisted circulation.  
Sep-Oct 1976

17/6/6 (Item 6 from file: 155)

02971446 76110867 PMID: 1082318

Ascending aorta insertion of the dual-chambered intraaortic balloon for counterpulsation during cardiac operations.  
Dec 1975

17/6/7 (Item 1 from file: 5)

13062216 BIOSIS NO.: 200100269365  
Method for delivery of therapeutic agents to the heart.  
2000

17/6/8 (Item 2 from file: 5)  
13052809 BIOSIS NO.: 200100259958  
Piston-action intra-aortic coronary assist device.  
2000

17/6/9 (Item 3 from file: 5)  
13028293 BIOSIS NO.: 200100235442  
Integral aortic arch infusion clamp catheter.  
2000

17/6/10 (Item 4 from file: 5)  
12845288 BIOSIS NO.: 200100052437  
Method of using integral aortic arch infusion clamp.  
2000

17/6/12 (Item 6 from file: 5)  
12540909 BIOSIS NO.: 200000294411  
Endoscopic cardioplegia infusion cannula and method of use.  
1999

17/6/14 (Item 8 from file: 5)  
03044125 BIOSIS NO.: 000070069743  
THE ARTERIAL SYSTEM CHARACTERIZED IN THE TIME DOMAIN  
1980

17/6/16 (Item 1 from file: 73)  
07593514 EMBASE No: 1999083981  
Surgical revascularisation with a new catheter using a left lateral thoracotomy  
1999

17/7/3 (Item 3 from file: 155)  
DIALOG(R)File 155:MEDLINE(R)  
04623171 83203106 PMID: 6601936

**Balloon catheter occlusion of the ascending aorta.**

Erath HG; Stoney WS

Annals of thoracic surgery (UNITED STATES) May 1983, 35 (5) p560-1,  
ISSN 0003-4975 Journal Code: 683

Languages: ENGLISH

Document type: Journal Article

Record type: Completed

Dense calcification of the ascending aorta predisposes to aortic injury and distal embolization when the aorta is cross-clamped or partially clamped in the performance of cardiac operations. **We occluded the ascending aorta with a Foley balloon catheter** in 2 patients undergoing aortocoronary bypass grafting. The technique used is described in this report.

Record Date Created: 19830610

17/7/11 (Item 5 from file: 5)  
DIALOG(R)File 5:Biosis Previews(R)  
(c) 2001 BIOSIS. All rts. reserv.  
12639221 BIOSIS NO.: 200000392723  
**System and methods for performing endovascular procedures.**  
AUTHOR: Stevens John H(a); Peters William S; Sterman Wesley D; Gifford

Hanson S

AUTHOR ADDRESS: (a)Palo Alto, CA\*\*USA

JOURNAL: Official Gazette of the United States Patent and Trademark Office  
Patents 1231 (5):pNo pagination Feb. 29, 2000

MEDIUM: e-file

ISSN: 0098-1133

DOCUMENT TYPE: Patent

RECORD TYPE: Abstract

LANGUAGE: English

**ABSTRACT:** A system for inducing cardioplegic arrest and performing an endovascular procedure within the heart or blood vessels of a patient. An **endoaortic partitioning catheter has an inflatable balloon which occludes the ascending aorta when inflated.** Cardioplegic fluid may be infused through a lumen of the endoaortic partitioning catheter to stop the heart while the patient's circulatory system is supported on cardiopulmonary bypass. One or more endovascular devices are introduced through an internal lumen of the endoaortic partitioning catheter to perform a diagnostic or therapeutic endovascular procedure within the heart or blood vessels of the patient. Surgical procedures such as coronary artery bypass surgery or heart valve replacement may be performed in conjunction with the endovascular procedure while the heart is stopped. Embodiments of the system are described for performing: fiberoptic angioscopy of structures within the heart and its blood vessels, valvuloplasty for correction of valvular stenosis in the aortic or mitral valve of the heart, angioplasty for therapeutic dilatation of coronary artery stenoses, coronary stenting for dilatation and stenting of coronary artery stenoses, atherectomy or endarterectomy for removal of atheromatous material from within coronary artery stenoses, intravascular ultrasonic imaging for observation of structures and diagnosis of disease conditions within the heart and its associated blood vessels, fiberoptic laser angioplasty for removal of atheromatous material from within coronary artery stenoses, transmyocardial revascularization using a side-firing fiberoptic laser catheter from within the chambers of the heart, and electrophysiological mapping and ablation for diagnosing and treating electrophysiological conditions of the heart.

17/7/13 (Item 7 from file: 5)

DIALOG(R)File 5: Biosis Previews(R)

(c) 2001 BIOSIS. All rts. reserv.

12533813 BIOSIS NO.: 200000287315

**Method of occluding a patient's ascending aorta and returning oxygenated blood to the patient from a bypass system.**

AUTHOR: Peters William S(a)

AUTHOR ADDRESS: (a)Tamarama\*\*Australia

JOURNAL: Official Gazette of the United States Patent and Trademark Office  
Patents 1227 (4):pNo pagination Oct. 26, 1999

MEDIUM: e-file.

ISSN: 0098-1133

DOCUMENT TYPE: Patent

RECORD TYPE: Abstract

LANGUAGE: English

**ABSTRACT:** A process for inducing cardioplegic arrest of a heart in situ in a patient's body, comprising maintaining the patient's systemic circulation by peripheral cardiopulmonary by-pass, **occluding the ascending aorta through a percutaneously placed arterial balloon catheter,** venting the left side of the heart, and introducing a cardioplegic agent into the coronary circulation. This procedure readies the heart for a variety of surgical procedures that can be performed percutaneously through lumina in the catheter. An aortic catheter for use in the process is also described.

17/7/15 (Item 1 from file: 8)  
 DIALOG(R)File 8: Ei Compendex(R)  
 (c) 2001 Engineering Info. Inc. All rts. reserv.  
 05543149 E.I. No: EIP00045146377  
**Title: New end-aortic occlusion balloon for minimally invasive cardiac surgery (MICS) development and clinical evaluation**  
 Author: Yozu, Ryohei; Shin, H.; Maehara, T.; Mitsumaru, A.; Iino, Y.; Matayoshi, T.; Morita, M.; Kawada, S.  
 Corporate Source: Keio Univ, Tokyo, Jpn  
 Conference Title: 46th Annual Conference and Exposition of ASAIO  
 Conference Location: New York, NY, USA Conference Date: 19000628-19000701  
 E.I. Conference No.: 56674  
 Source: ASAIO Journal v 46 n 2 Mar-Apr 2000. p 172  
 Publication Year: 2000  
 CODEN: ASATEJ ISSN: 1058-2916  
 Language: English  
 Document Type: JA; (Journal Article) Treatment: X; (Experimental)  
 Journal Announcement: 0006W2  
**Abstract:** In this study, an end-aortic balloon catheter which occludes the ascending aorta without the need for an external cross clamp, vents the aortic roof, and enables delivery of antegrade cardioplegia, has been developed. This catheter is feasible, safe, easy to use and effective for minimally invasive surgery.

66/6/1 (Item 1 from file: 155)  
 09569406 97379267 PMID: 9237589  
 Mitral valve replacement via a right mini-thoracotomy in the dog: use of carbon dioxide to reduce intracardiac air.  
 Jun 1997

66/6/2 (Item 2 from file: 155)  
 09405819 97386377 PMID: 9244226  
 Monitoring considerations for port-access cardiac surgery.  
 Jul 15 1997

66/6/3 (Item 3 from file: 155)  
 09402931 97304073 PMID: 9160358  
 Extracorporeal circulation for port-access cardiac surgery.  
 Mar 1997

66/6/4 (Item 4 from file: 155)  
 09364168 97349174 PMID: 9205178  
 Closed-chest cardiopulmonary bypass and cardioplegia: basis for less invasive cardiac surgery.  
 Jun 1997

66/6/5 (Item 5 from file: 155)  
 09357044 97312921 PMID: 9169362  
 Port-access bilateral internal mammary artery grafting for left main coronary artery disease: canine feasibility study.  
 Jan-Feb 1997

66/6/6 (Item 6 from file: 155)  
 09243987 97067995 PMID: 8911323  
 Port-access mitral valve replacement in dogs.  
 Nov 1996

66/6/7 (Item 7 from file: 155)  
09216144 96309560 PMID: 8694602  
Port-access coronary artery bypass with cardioplegic arrest: acute and chronic canine studies.  
Aug 1996

66/6/8 (Item 8 from file: 155)  
08910580 96176924 PMID: 8601971  
Port-access coronary artery bypass grafting: a proposed surgical method.  
Mar 1996

66/6/9 (Item 1 from file: 144)  
12814279 PASCAL No.: 97-0030406  
Port-access mitral valve replacement in dogs. Discussion  
1996  
Copyright (c) 1997 INIST-CNRS. All rights reserved.

66/6/10 (Item 1 from file: 5)  
13205042 BIOSIS NO.: 200100412191  
Methods and apparatus for anchoring an occluding member.  
2001

66/6/11 (Item 2 from file: 5)  
13062216 BIOSIS NO.: 200100269365  
Method for delivery of therapeutic agents to the heart.  
2000

66/6/12 (Item 3 from file: 5)  
13031211 BIOSIS NO.: 200100238360  
Minimally-invasive devices and methods for treatment of congestive heart failure.  
2000

66/6/13 (Item 4 from file: 5)  
12912487 BIOSIS NO.: 200100119636  
Method for thoracoscopic intracardiac procedures including septal defect.  
2000

66/6/16 (Item 7 from file: 5)  
10729998 BIOSIS NO.: 199799351143  
Intraoperative monitoring of patients undergoing port-access coronary artery bypass grafting.  
1996

66/7/14 (Item 5 from file: 5)  
DIALOG(R) File 5: Biosis Previews(R)  
(c) 2001 BIOSIS. All rts. reserv.  
12639221 BIOSIS NO.: 200000392723  
**System and methods for performing endovascular procedures.**  
AUTHOR: Stevens John H(a); Peters William S ; Sterman Wesley D; Gifford Hanson S  
AUTHOR ADDRESS: (a) Palo Alto, CA\*\*USA  
JOURNAL: Official Gazette of the United States Patent and Trademark Office  
Patents 1231 (5):pNo pagination Feb. 29, 2000  
MEDIUM: e-file  
ISSN: 0098-1133

*a duplicate citation*

DOCUMENT TYPE: Patent

RECORD TYPE: Abstract

LANGUAGE: English

ABSTRACT: A system for inducing cardioplegic arrest and performing an endovascular procedure within the heart or blood vessels of a patient. An **endoaortic partitioning catheter has an inflatable balloon which occludes the ascending aorta when inflated.** Cardioplegic fluid may be infused through a lumen of the endoaortic partitioning catheter to stop the heart while the patient's circulatory system is supported on cardiopulmonary bypass. One or more endovascular devices are introduced through an internal lumen of the endoaortic partitioning catheter to perform a diagnostic or therapeutic endovascular procedure within the heart or blood vessels of the patient. Surgical procedures such as coronary artery bypass surgery or heart valve replacement may be performed in conjunction with the endovascular procedure while the heart is stopped. Embodiments of the system are described for performing: fiberoptic angioscopy of structures within the heart and its blood vessels, valvuloplasty for correction of valvular stenosis in the aortic or mitral valve of the heart, angioplasty for therapeutic dilatation of coronary artery stenoses, coronary stenting for dilatation and stenting of coronary artery stenoses, atherectomy or endarterectomy for removal of atheromatous material from within coronary artery stenoses, intravascular ultrasonic imaging for observation of structures and diagnosis of disease conditions within the heart and its associated blood vessels, fiberoptic laser angioplasty for removal of atheromatous material from within coronary artery stenoses, transmyocardial revascularization using a side-firing fiberoptic laser catheter from within the chambers of the heart, and electrophysiological mapping and ablation for diagnosing and treating electrophysiological conditions of the heart.

68/6,K/2 (Item 2 from file: 155)

DIALOG(R)File 155:

07862753 93202297 PMID: 8454079

Isolated profundaplasty in critical limb ischaemia--still of any use?  
Jan 1993

... 0.05). Risk factors and indicators for arteriosclerotic disease, age of the patient and ankle-brachial systolic pressure index (ABI) had no significant predictive value. Evaluation of the preoperative arteriographies revealed that only the aspect of the profunda femoris artery beyond its orifice was of significance: there was a strong relationship between the absence of obstructive disease in...

; Aged; Aged, 80 and over; Angiography; Angioplasty, Balloon; Blood Vessel Prosthesis; Combined Modality Therapy; Endarterectomy; Follow-Up Studies; Ischemia--radiography--RA; Middle Age...

68/6,K/3 (Item 3 from file: 155)

DIALOG(R)File 155:

07788488 92095756 PMID: 1728239

Evaluation of an extraaortic counterpulsation device in severe cardiac failure.  
Jan 1992

A valveless, single-orifice polyurethane ventricle with a maximum stroke volume of 60 mL was implanted on the brachiocephalic artery just above the aortic arch in sheep (n=14) to act as an extraaortic counterpulsation device. In parallel, an intraaortic balloon was placed in the descending thoracic aorta. Both devices were pneumatically driven with an intraaortic balloon pump console that was gated by the electrocardiogram to provide aortic diastolic augmentation at a...



...tension time index and aortic end-diastolic pressure (p less than 0.02). The intraaortic balloon pump was able to significantly reduce only tension time index (p less than 0.002...

; Cardiac Output, Low--physiopathology--PP; Evaluation Studies; Heart-Assist Devices; Hemodynamics--physiology--PH; Intra-Aortic Balloon Pumping; Polyurethanes; Prostheses and Implants; Sheep; Stroke Volume--physiology--PH

68/6,K/4 (Item 4 from file: 155)

DIALOG(R)File 155:

07477221 92088689 PMID: 1751178

Comparison of an extraaortic counterpulsation device versus intraaortic balloon pumping in severe cardiac failure.

Jul-Sep 1991

Comparison of an extraaortic counterpulsation device versus intraaortic balloon pumping in severe cardiac failure.

A valveless, single orifice polyurethane ventricle was implanted on the brachiocephalic artery in sheep (n = 14) to provide extraaortic counterpulsation. In parallel, an intraaortic balloon was placed in the descending thoracic aorta. Both devices were pneumatically driven by a standard intraaortic balloon pump (IABP) console at a preload of 40 cc. Severe cardiac failure was induced with...

... which enhances the oxygen supply/consumption ratio (S/C) of the left ventricle. The intraaortic balloon pump does not significantly increase S/C in severe cardiac failure, and will increase afterload...

...Descriptors: Heart Failure, Congestive--physiopathology--PP; \*Heart Failure, Congestive--therapy--TH; \*Hemodynamics--physiology--PH; \*Intra-Aortic Balloon Pumping--instrumentation--IS

68/6,K/5 (Item 5 from file: 155)

DIALOG(R)File 155:

06763156 91275155 PMID: 2054818

Aortic valvuloplasty.

May 1991

Balloon aortic valvuloplasty is a palliative treatment for adult patients with aortic stenosis who are not candidates for AVR. BAV can be performed using a single balloon (one balloon, one shaft), multiple balloons (multiple balloons, multiple shafts), or complex balloon configurations (bifoil or trefoil balloons on a single shaft) by the retrograde (femoral or brachial) or antegrade (transseptal) approach. The mechanisms of successful BAV are fracture of calcified nodules, separation...

... fused commissures, and simple stretching of valve leaflets, leading to increased leaflet mobility and larger orifice dimensions. Clinically, these changes lead to a 50% to 70% decrease in transaortic valve gradient...

Descriptors: Aortic Valve Stenosis--therapy--TH; \*Balloon Dilatation; Balloon Dilatation--adverse effects--AE; Balloon Dilatation--methods--MT; Ventricular Function, Left

68/6,K/6 (Item 1 from file: 73)

DIALOG(R)File 73:(c) 2001 Elsevier Science B.V. All rts. reserv.

07597648 EMBASE No: 1999088444

Y-stenting: Selection of stents, applicability of small lumen guiding catheters, efficacy and limitations

1999

...Y-stenting bifurcation lesions. The first stent is implanted in the major branch overlying the ostium of the bifurcation, and the second stent is implanted into the branch through its struts...

...Excepting the patient with left main shock syndrome, the others were

approached via radial or brachial artery using a 6F or 7F guiding catheters. All stents were deployed as bared, manually crimped on low profile monorail balloon catheters. No complications were observed, and evidence of acute ischemia subsided in all. One restenosis of the ostium of the calcified diagonal with recurring ischemia eventually required CABG. Conclusions: Although long-term results are unknown, 'Y-stenting' bifurcation lesions can be performed without difficulty via radial or brachial arteries using small lumen guiding catheters. The use of gfx stents or the supplemental addition...

68/6,K/9 (Item 3 from file: 94)

DIALOG(R)File 94:(c)2001 Japan Science and Tech Corp(JST). All rts.reserv.  
01987696 JICST ACCESSION NUMBER: 94A0242241 FILE SEGMENT: JICST-E

A Case of Aortitis Syndrome with Left Coronary Ostial Stenosis., 1994

...ABSTRACT: case report of a 38 year old woman with aortitis syndrome involving the left coronary ostium . She was referred to our hospital for further investigation of the loss of pulses of...

...C-reactive protein were elevated. The coronary angiography showed severe stenosis of the left coronary ostium . Angiography of the left subclavian artery showed the left brachial artery was occluded and distal portion filled from collaterals. During angiography she became hypotensive and arrested. Resuscitation was successful and intra-aortic balloon pumping was needed. Since aortitis syndrome may have unsuspected coronary ostial stenosis, availability of intra-aortic balloon pumping is suggested prior to angiogram. (author abst.)

...DESCRIPTORS: intra-aortic balloon pumping

...BROADER DESCRIPTORS: balloon dilatation

68/7/7 (Item 1 from file: 94)

DIALOG(R)File 94:JICST-EPlus

(c)2001 Japan Science and Tech Corp(JST). All rts. reserv.

02556241 JICST ACCESSION NUMBER: 95A0728637 FILE SEGMENT: JICST-E

Transluminal Angioplasty for Atherosclerotic Disease of the Subclavian and Vertebral Arteries.

SANPEI KENJI (1); SHIBATA IEKADO (1); TERAOKA HIDEO (1); KAZEKAWA KIYOSHI (2); YOSHIMURA SHIN'ICHI (3); NISHI SHOGO (3); HASHIMOTO NOBUO (3)

(1) Toho Univ., Sch. of Med.; (2) Fukuokatokushukai Byoin; (3) National Cardiovascular Center

Toho Igakkai Zasshi(Journal of the Medical Society of Toho University), 1995, VOL.42,NO.2, PAGE.167-172, FIG.5, REF.4

JOURNAL NUMBER: G0654AAD ISSN NO: 0040-8670 CODEN: TOIZA

UNIVERSAL DECIMAL CLASSIFICATION: 616.12-089

LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan

DOCUMENT TYPE: Journal

ARTICLE TYPE: Original paper

MEDIA TYPE: Printed Publication

ABSTRACT: Twenty-nine patients, 24 men and 5 women, ranging from 32-73 years of age, with atherosclerotic stenosis of the subclavian or vertebral arteries were treated with percutaneous transluminal angioplasty(PTA) during the past four years. Affected locations of the arteries were as follows: 7 subclavian artery, 20 ostium of the vertebral artery, 2 distal vertebral artery. PTA was successfully performed in 23 cases (initial success rate 79.3%) achieving postoperative clinical improvement in all patients. Twenty patients were observed from 1 to 12 months(mean 4.3 months) after the procedure. Follow-up angiography demonstrated restenosis in 2 patients(10%). PTA for the brachiocephalic artery requires guiding catheters and/or newly designed balloon

catheters that have resulted in higher success rates and lower recurrent rates of stenosis. (author abst.)

68/7/8 (Item 2 from file: 94)  
DIALOG(R)File 94:JICST-EPlus  
(c)2001 Japan Science and Tech Corp(JST). All rts. reserv.  
02276620 JICST ACCESSION NUMBER: 95A0171774 FILE SEGMENT: JICST-E  
Protective balloon in percutaneous transluminal angioplasty for  
brachiocephalic arteries.  
NAKAHARA ICHIRO (1); TAKI WARO (1); KIKUCHI HARUHIKO (1); TANAKA MASATO  
(1); MATSUMOTO KOJI (1)

(1) Kyoto Univ.  
Nosotchu(Japanese Journal of Stroke), 1994, VOL.16,NO.4, PAGE.256-264,  
FIG.17, TBL.1, REF.21

JOURNAL NUMBER: X0160AAS ISSN NO: 0912-0726  
UNIVERSAL DECIMAL CLASSIFICATION: 616.83-08  
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan  
DOCUMENT TYPE: Journal

ARTICLE TYPE: Original paper

MEDIA TYPE: Printed Publication

ABSTRACT: Distal thromboembolic complications are one of the major concerns in percutaneous transluminal angioplasty(PTA) or brachiocephalic arterics. Recently, the protective balloon (PB) technique has been applied in limited series to occluded the affected artery temporarily during PTA to wash out possible debris into the extracranial artery. We report our recent experience of 7 patients with brachiocephalic arterial stenosis who were treatd by PTA using the PB technique. The treated lesions comprised two in the subclavian artery, three in the orifice of the vertebral artery, and two in the internal carotid artery (ICA) bifurcation. The age range of the patients was between 24 and 73 years old(mean 58 years old). The cause of stenosis was arteriosclerosis in 6 patients and aortitis syndrome in one. PTA was performed according to the usual method except for placement of the sheath introducer at two sites(both at the femoral arterics, or one at the femoral and the other at the brachial artery), one for the PTA catheter and the other for the PB catheter. The PB was placed either proximal or distal to the stenotic segment in the affected artery. In the distal PB technique, the distal portion of the affected artery was occluded by the PB and possible debris was aspirated and/or washed out into the extracranial artery with saline. In the proximal PB technique, the PB was inflated proximal to the stenosis, and the flow of the affected artry was temporarily reversed using an induced steal phenomenon or back flow to protect migration of possible debris to the distal portion. Antiplatelet agent was administered several days prior to the PTA and continued for 3-4 months. Systemic heparinization was performed routinely during the procedure and continued in a tapered fashion for several days. The degree of stenosis improved markedly from 81% to 22% on average postoperatively. (abridged author abst.)

File 9:Business & Industry(R) Jul/1994-2001/Oct 18  
File 16:Gale Group PROMT(R) 1990-2001/Oct 18  
File 160:Gale Group PROMT(R) 1972-1989  
File 98:General Sci Abs/Full-Text 1984-2001/Sep  
File 148:Gale Group Trade & Industry DB 1976-2001/Oct 18  
File 621:Gale Group New Prod.Annou.(R) 1985-2001/Oct 18  
File 636:Gale Group Newsletter DB(TM) 1987-2001/Oct 18  
File 441:ESPICOM Pharm&Med DEVICE NEWS 2001/Oct W2  
File 20:World Reporter 1997-2001/Oct 19  
File 813:PR Newswire 1987-1999/Apr 30

File 15:ABI/Inform(R) 1971-2001/Oct 18  
 File 88:Gale Group Business A.R.T.S. 1976-2001/Oct 19  
 S1 62403 BALLOON  
 S2 352 ASCENDING()AORTA  
 S3 23 (OSTIA OR OSTIUM OR ORIFICE) (N) (CARDIAC? OR CORONARY)  
 S4 421 (BRACHIAL OR BRACHIOCEPHALIC) ()ARTERY  
 S5 20 S1(S)S2  
 S6 7 RD (unique items)  
 S7 481 OSTIUM OR OSTIA  
 S8 1 S1 AND S4 AND S7

6/6,K/1 (Item 1 from file: 16)  
 DIALOG(R)File 16:(c) 2001 The Gale Group. All rts. reserv.  
 08858364 Supplier Number: 76934015 (USE FORMAT 7 FOR FULLTEXT)  
 ESTECH Begins Totally Closed-Chest Cardiac Surgery Procedures in U.S.;  
 Using Patented Remote Access Perfusion Catheter Technology.  
 August 2, 2001  
 Word Count: 582  
 ... site in the femoral artery at the groin. The Cannula is then guided  
 into the ascending aorta , close to the heart. Also, instead of  
 mechanically clamping the aorta to block blood flow...  
 ...conventional procedures, the ESTECH RAP Cannula occludes the aorta by  
 simple inflation of an atraumatic balloon .  
 ESTECH CEO Art Bertolero commented, "ESTECH's patented RAP Cannula  
 technology permits less invasive heart...

6/6,K/2 (Item 2 from file: 16)  
 DIALOG(R)File 16:(c) 2001 The Gale Group. All rts. reserv.  
 08352532 Supplier Number: 70715937 (USE FORMAT 7 FOR FULLTEXT)  
 ESTECH Begins Totally Closed-Chest Cardiac Surgery Procedures Using  
 Patented Remote Access Perfusion Catheter Technology.  
 Feb 21, 2001  
 Word Count: 757  
 ... the femoral artery at the groin, and guided into position placing  
 its tip in the ascending aorta , close to the heart. Instead of  
 mechanically clamping the aorta to block blood flow to...  
 ...Cannula clamps the aorta through the remote inflation of a non-traumatic  
 intra-aortic occlusion balloon .  
 Furthermore, the RAP Cannula provides antegrade arterial blood flow  
 to support the patient's blood...

6/6,K/3 (Item 1 from file: 160)  
 DIALOG(R)File 160:(c) 1999 The Gale Group. All rts. reserv.  
 01235002  
 Device and method get drugs to heart rapidly.  
 August 3, 1985  
 ... by RT Gordon of Lutheran General Hospital. A drug-carrying catheter  
 is introduced into an ascending aorta at the time of a left ventricular  
 contraction. The catheter's balloon is inflated, carrying the drug into  
 the coronary arteries. ...

6/6,K/4 (Item 1 from file: 148)  
 DIALOG(R)File 148:(c)2001 The Gale Group. All rts. reserv.  
 08080814 SUPPLIER NUMBER: 17169785 (USE FORMAT 7 OR 9 FOR FULL TEXT)  
 Non-surgical myocardial reduction for hypertrophic obstructive  
 cardiomyopathy.  
 July 22, 1995

WORD COUNT: 2926 LINE COUNT: 00263

... trans-septal and retrograde cardiac catheterisation. Pressures were measured by fluid-filled catheters in the ascending aorta and simultaneously at various points in the left ventricle. A trans-septally introduced Brockenbrough catheter...

...F8 coronary angioplasty guiding catheter and, after heparinisation, a small diameter over-the-wire angioplasty balloon was advanced into the first large septal branch of the left anterior descending coronary artery with the help of a 0.35 mm steerable guide wire. Contrast injections through the balloon catheter were used to delineate the area of the interventricular septum supplied by this artery...

...relate it to the location of the myocardial bulge. The artery was then occluded by balloon inflation with pressures ranging from 300 to 500 kPa, and intracavity and aortic pressures were recorded simultaneously during the interventions described above. The balloon obstruction was maintained for up to 5 min, during which the patients reported mild to...

...but no other symptoms. In two patients, 0.5 mg verapamil was injected through the balloon lumen and measurements were repeated.

#### Results

In all three patients, the intraventricular pressure gradients reacted...

6/6,K/5 (Item 1 from file: 636)

DIALOG(R)File 636:(c) 2001 The Gale Group. All rts. reserv.

03728805 Supplier Number: 48060262 (USE FORMAT 7 FOR FULLTEXT)

FIRST STEPS ON LONG ROAD TO GENE THERAPY FOR MARFAN'S SYNDROME AORTIC

ANEURYSMS By David N. Leff Science Editor

Oct 20, 1997

Word Count: 1035

... Enough

What causes this multifaceted malady to cause the aorta to swell up like a balloon and burst? "Throughout our lifetime," explained molecular geneticist Francesco Ramirez, of Mt. Sinai Medical Center, in New York, "we subject our ascending aorta from the moment the adult circulation starts after birth to something like one billion insults..."

6/6,K/6 (Item 1 from file: 20)

DIALOG(R)File 20:(c) 2001 The Dialog Corporation. All rts. reserv.

04589732 (USE FORMAT 7 OR 9 FOR FULLTEXT)

World's Largest Registry of Minimally Invasive CABG Demonstrates Excellent Results With Minimal Morbidity and Mortality

March 10, 1999

WORD COUNT: 494

... of venous and arterial catheters and cannulae, including a balloon catheter for occlusion of the ascending aorta provided closed-chest CPB. Of these procedures, 485 (34 percent) were single-vessel CABG; 509...

6/6,K/7 (Item 2 from file: 20)

DIALOG(R)File 20:(c) 2001 The Dialog Corporation. All rts. reserv.

01367066 (USE FORMAT 7 OR 9 FOR FULLTEXT)

Heartport Launches New Generation of Port-Access Minimally Invasive Cardiac Surgery Devices

April 13, 1998

WORD COUNT: 416

... vent the aortic root, deliver antegrade cardioplegia, and allow monitoring of the aortic root and balloon pressures. New enhancements are designed to improve and stabilize balloon positioning, simplify assembly and preparation of the catheters in the operating room, and help maintain...

8/3,K/1 (Item 1 from file: 148)  
DIALOG(R)File 148:Gale Group Trade & Industry DB  
(c)2001 The Gale Group. All rts. reserv.  
05136845 SUPPLIER NUMBER: 10595440 (USE FORMAT 7 OR 9 FOR FULL TEXT)  
Angina pectoris: medical management, angioplasty, coronary artery bypass.  
Chapman, Don W.  
Consultant, v31, n3, p28(5)  
March, 1991  
ISSN: 0010-7069 LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT  
WORD COUNT: 2653 LINE COUNT: 00211  
... catheter through the coronary vessels retrograde from the femoral  
arteries or, at times, through the brachial artery . It is inserted into  
the coronary artery ostium and fed down to the level of the stenosis,  
where ballooning is attempted. The balloon cases (Table 2). Over the span,  
(2) myocardial infarction developed during the balloon angioplasty in  
just over 1% of patients. Emergency surgery was necessary about 3.8% of...  
...coronary artery stenosis has been inadequately opened. The Emory Medical  
School (3) success rate with balloon angioplasty has been about 78% (399)  
among 514 patients followed up for 3 years or...  
CAPTIONS: New situations in which balloon angioplasty is being used.  
(table); Experience with balloon angioplasty at The Methodist Hospital,  
Houston, Tex. (table); Medical vs surgical treatment of coronary artery...

File 350:Derwent WPIX 1963-2001/UD,UM &UP=200160

File 344:CHINESE PATENTS ABS APR 1985-2001/Aug

File 347:JAPIO OCT 1976-2001/JUN(UPDATED 011001)

File 371:French Patents 1961-2001/BOPI 200141

Set	Items	Description
S1	13696	BALLOON
S2	121	ASCENDING()AORTA
S3	40	(OSTIA OR OSTIUM OR ORIFICE) (N) (CARDIAC? OR CORONARY)
S4	60	(BRACHIAL OR BRACHIOCEPHALIC) ()ARTERY
S5	40	S1 AND S2
S6	3	S5 AND S3
S7	2	S5 AND S4
S8	2	S6 AND S7 [duplicates]
S9	1	S6:S7 NOT S8 [duplicates]

File 348:EUROPEAN PATENTS 1978-2001/Oct W02

File 349:PCT Fulltext 1983-2001/UB=20011018,UT=20011011

Set	Items	Description
S1	11869	BALLOON
S2	521	ASCENDING()AORTA
S3	278	(OSTIA OR OSTIUM OR ORIFICE) (N) (CARDIAC? OR CORONARY)
S4	389	(BRACHIAL OR BRACHIOCEPHALIC) ()ARTERY
S5	151	S1 (S) S2
S6	67	S2(S)S3
S7	34	S5(S)S3
S8	36	S5(S)S4
S9	17	S7 (S)S8
S10	17	IDPAT (sorted in duplicate/non-duplicate order)
S11	17	IDPAT (primary/non-duplicate records only)

11/TI/2 (Item 2 from file: 349)

DIALOG(R)File 349:(c) 2001 WIPO/Univentio. All rts. reserv.

MULTICHANNEL CATHETER WITH OBTURATOR

11/TI/3 (Item 3 from file: 349)

DIALOG(R)File 349:(c) 2001 WIPO/Univentio. All rts. reserv.

PERFUSION FILTER CATHETER

11/TI/4 (Item 4 from file: 349)

DIALOG(R)File 349:(c) 2001 WIPO/Univentio. All rts. reserv.

SURGICAL SYSTEM AND PROCEDURE FOR TREATMENT OF MEDICALLY REFRACTORY ATRIAL FIBRILLATION

11/TI/5 (Item 5 from file: 349)

DIALOG(R)File 349:(c) 2001 WIPO/Univentio. All rts. reserv.

MINIMALLY-INVASIVE DEVICES AND METHODS FOR TREATMENT OF CONGESTIVE HEART FAILURE

11/TI/6 (Item 6 from file: 349)

DIALOG(R)File 349:(c) 2001 WIPO/Univentio. All rts. reserv.

LESS-INVASIVE DEVICES AND METHODS FOR CARDIAC VALVE SURGERY

11/TI/7 (Item 7 from file: 349)

DIALOG(R)File 349:(c) 2001 WIPO/Univentio. All rts. reserv.

DEVICES AND METHODS FOR PORT-ACCESS MULTIVESSEL CORONARY ARTERY BYPASS SURGERY

11/TI/9 (Item 9 from file: 349)

DIALOG(R)File 349:(c) 2001 WIPO/Univentio. All rts. reserv.  
ENDOVASCULAR CARDIAC VENTING CATHETER AND METHOD

11/TI/12 (Item 12 from file: 349)  
DIALOG(R)File 349:(c) 2001 WIPO/Univentio. All rts. reserv.  
ENDOSCOPIC RETRACTION SYSTEM AND METHOD

11/3,AB/1 (Item 1 from file: 348)  
DIALOG(R)File 348:EUROPEAN PATENTS  
(c) 2001 European Patent Office. All rts. reserv.  
01324325

Cardiopulmonary bypass system for closed-chest intervention  
Kardiopulmonaler Bypass fur Eingriffe bei geschlossenem Thorax  
Systeme de circulation extracorporelle pour intervention sur thorax ferme  
PATENT ASSIGNEE:

HEARTPORT, INC., (2074211), 700 Bay Road, Redwood City, CA 94063, (US),  
(Applicant designated States: all)

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LEGAL REPRESENTATIVE:

Harrison, David Christopher et al (31532), MEWBURN ELLIS York House 23  
Kingsway, London WC2B 6HP, (GB)

PATENT (CC, No, Kind, Date): EP 1129744 A1 010905 (Basic)

APPLICATION (CC, No, Date): EP 2001112373 941110;

PRIORITY (CC, No, Date): US 162742 931203

DESIGNATED STATES: AT; BE; CH; DE; DK; ES; FR; GB; GR; IE; IT; LI; LU; MC;  
NL; PT; SE

RELATED PARENT NUMBER(S) - PN (AN):

EP 731720 (EP 95902513)

INTERNATIONAL PATENT CLASS: A61M-025/00; A61M-001/10

ABSTRACT EP 1129744 A1

The invention provides a system and method for establishing  
cardiopulmonary bypass and performing an interventional procedure in a  
patient's heart or great vessel with a minimum of arterial and venous  
penetrations. In one embodiment, a bypass cannula (180) configured for  
introduction into a patient's artery includes a blood flow lumen (188)  
which may be connected to a cardiopulmonary bypass system (92,94,96,100).  
A catheter shaft (202) is coupled to the bypass cannula, usually within  
the blood flow lumen, and has a member (216) at its distal end for  
performing an interventional procedure within the heart or great vessel.  
In a particular embodiment, the catheter shaft has an expandable member  
such as an inflatable balloon disposed near its distal for occluding the  
ascending aorta so as to substantially block all blood flow therethrough  
for a plurality of cardiac cycles. The catheter shaft has an inner lumen  
(212) through which cardio-plegic fluid may be delivered upstream of the  
occluding member to infuse cardio-plegic fluid into the coronary arteries  
for arresting the heart. The blood flow lumen in the bypass cannula is  
connected to a cardiopulmonary bypass system, which receives deoxygenated  
blood from the patient's venous system, oxygenates the blood, and  
delivers the oxygenated blood to the patient's arterial system through  
the blood flow lumen.

ABSTRACT WORD COUNT: 212

NOTE: Figure number on first page: 1



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FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200136	952
SPEC A	(English)	200136	14385
Total word count - document A			15337
Total word count - document B			0
Total word count - documents A + B			15337

11/3,AB/11 (Item 11 from file: 349)  
DIALOG(R)File 349:PCT Fulltext  
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00338977

RETROGRADE DELIVERY CATHETER AND METHOD FOR INDUCING CARDIOPLEGIC ARREST  
CATHETER D'ADMINISTRATION PAR VOIE RETROGRADE ET PROCEDE POUR INDUIRE UNE  
CARDIOPLEGIE

Patent Applicant/Assignee:

HEARTPORT INC,

Inventor(s):

→ BOYD Stephen W,  
STEVENS John H,  
EVARD Philip C,  
ADAMS Craig L,

Patent and Priority Information (Country, Number, Date):

Patent: WO 9621489 A1 19960718

Application: WO 95US16169 19951208 (PCT/WO US9516169)

Priority Application: US 95372741 19950112

Designated States: AU CA JP AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE

Publication Language: English

Fulltext Word Count: 12157

English Abstract

A retrograde delivery catheter (10) includes at its distal end a balloon (11) configured to occlude the coronary sinus (21) of a patient's heart, and has a length and flexibility which allow the distal end to be positioned in the coronary sinus (21) with the proximal end extending trans-luminal to a peripheral vein such as an internal jugular vein (44) and out of the body through a puncture (24) therein. The delivery catheter (20) has a delivery lumen (128) extending between its proximal and distal ends which is configured to allow a cardioplegia fluid to be delivered at a flow rate of at least 200 ml/min with a pump pressure less than 300 mm Hg, thereby allowing cardioplegia arrest to be maintained using a blood cardioplegia fluid without causing excessive hemolysis. In a method of inducing cardioplegia arrest according to the invention, the patient is placed on cardiopulmonary bypass (18), the coronary arteries (50, 51) are isolated from remainder of the arterial system, and the delivery catheter (10) is positioned trans-luminal in the coronary sinus (21) from a peripheral vein.

11/3,AB/13 (Item 13 from file: 349)  
DIALOG(R)File 349:PCT Fulltext  
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00298325

SYSTEM FOR CARDIAC PROCEDURES

SYSTEME POUR INTERVENTIONS CARDIAQUES

Patent Applicant/Assignee:

STEVENS John H,

Inventor(s):

STEVENS John H,  
Patent and Priority Information (Country, Number, Date):  
Patent: WO 9516476 A1 19950622  
Application: WO 93US12323 19931217 (PCT/WO US9312323)  
Priority Application: WO 93US12323 19931217  
Designated States: AU CA JP AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE  
Publication Language: English  
Fulltext Word Count: 9578  
English Abstract

A system for accessing a patient's cardiac anatomy which includes an occluding catheter with an expandable member or balloon on a distal extremity of the catheter which when expanded within the patient's ascending aorta separates the left side of the heart from the rest of the patient's arterial system. A cardiopulmonary by-pass is connected to a major vein, e.g. femoral, and a major artery, e.g. femoral, to withdraw blood from the major vein, remove carbon dioxide, oxygenate the withdrawn venous blood and then return the oxygenated blood to the patient's arterial system through the major artery. Preferably, the heart muscle or myocardium is paralyzed by the retrograde or antegrade delivery of a liquid containing cardioplegic material to the myocardium through patient's coronary sinus and coronary veins. The pulmonary trunk is vented by withdrawing liquid from the trunk through an inner lumen of an elongated catheter or by holding at least partially open the pulmonary valve and preferably also the tricuspid valve which depressurizes the left atrium. The cardiac accessing system is particularly suitable for removing aortic valves and replacing the removed valve with a prosthetic valve.

11/3,AB/14 (Item 14 from file: 349)  
DIALOG(R)File 349:PCT Fulltext  
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00297564  
DEVICES AND METHODS FOR INTRACARDIAC PROCEDURES  
DISPOSITIFS ET PROCEDURES DE CHIRURGIE INTRA-CARDIAQUE  
Patent Applicant/Assignee:  
STANFORD SURGICAL TECHNOLOGIES INC,  
Inventor(s):  
STERMAN Wesley D,  
GARRISON Michi E,  
GIFFORD Hanson S III,  
STEVENS John H,

Patent and Priority Information (Country, Number, Date):  
Patent: WO 9515715 A1 19950615  
Application: WO 94US13305 19941118 (PCT/WO US9413305)  
Priority Application: US 93163241 19931206  
Designated States: AU CA JP AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE  
Publication Language: English  
Fulltext Word Count: 16108  
English Abstract

The invention provides devices and methods for performing less invasive surgical procedures with an organ or vessel. One embodiment provides a method of closed chest surgical intervention within an internal cavity of a patient's heart. The patient's heart is arrested and cardiopulmonary by-pass is established. A scope (25) extending through a percutaneous intercostal penetration in the patient's chest is used to view an internal portion of the patient's chest. The penetration is formed in a wall of the heart using a cutter (110) introduced through the

percutaneous penetration. An interventional tool is then introduced through a cannula (22) positioned in the penetration. The interventional tool is inserted through the penetration to perform a surgical procedure within the internal cavity under visualization by a scope (25). A cutting tool is introduced into the patient's left atrium from a right portion of the patient's chest to remove the patient's mitral valve. A replacement valve (36) is then introduced through the intercostal space and through the penetration in the heart, and the replacement valve is attached in the mitral valve position.

11/3,AB/16 (Item 16 from file: 349)  
DIALOG(R) File 349:PCT Fulltext  
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00290215  
·ENDOVASCULAR SYSTEM FOR ARRESTING THE HEART  
DISPOSITIF ENDOVASCULAIRE POUR ARRETER LE COEUR  
Patent Applicant/Assignee:  
STANFORD SURGICAL TECHNOLOGIES INC,  
Inventor(s):  
EVARD Philip C,  
MACHOLD Timothy R,  
STEVENS John H,  
Patent and Priority Information (Country, Number, Date):  
Patent: WO 9508364 A1 19950330  
Application: WO 94US9938 19940901 (PCT/WO US9409938)  
Priority Application: US 93123411 19930917  
Designated States: AU CA JP AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE  
Publication Language: English  
Fulltext Word Count: 14219  
English Abstract

The invention provides an endovascular device (20) for partitioning the ascending aorta and a system for arresting the heart to facilitate the performance of procedures such as heart valve replacement or coronary artery bypass grafting without the need for a thoracotomy. According to the invention, an endovascular device (20) for partitioning a patient's ascending aorta comprises a flexible shaft (22) having a distal end (24), a proximal end (26), and a first inner lumen (29) therebetween with an opening (31) at the distal end (24). The shaft (22) may have a preshaped distal portion (32) with a curvature generally corresponding to the curvature of the patient's aortic arch. Expandable means (28) are disposed near the distal end (24) of the shaft (22) proximal to the opening (31) in the first inner lumen (29) for occluding the ascending aorta so as to block substantially all blood flow therethrough for a plurality of cardiac cycles. Means (90) for delivering cardioplegic fluid may be connected to the proximal end (26) of the device to infuse cardioplegic fluid into the coronary arteries for arresting the heart. The endovascular device of the invention is readily positionable in the ascending aorta, resists displacement caused by systolic blood flow, and maintains axial alignment with the center of the ascending aorta and aortic valve.

11/3,AB/15 (Item 15 from file: 349)  
DIALOG(R) File 349:PCT Fulltext  
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00297041  
CARDIOPULMONARY BYPASS SYSTEM FOR CLOSED-CHEST INTERVENTION  
SYSTEME DE CIRCULATION EXTRACORPORELLE POUR INTERVENTION A THORAX FERME

Patent Applicant/Assignee:

STANFORD SURGICAL TECHNOLOGIES INC,

Inventor(s):

STEVENS John H,  
STERMAN Wesley D,  
MACHOLD Timothy R,  
GIFFORD Hanson S,

Patent and Priority Information (Country, Number, Date):

Patent: WO 9515192 A1 19950608

Application: WO 94US12986 19941110 (PCT/WO US9412986)

Priority Application: US 93162742 19931203

Designated States: AU CA JP AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE

Publication Language: English

Fulltext Word Count: 17896

English Abstract

The invention provides a system and method for establishing cardiopulmonary bypass and performing an interventional procedure in a patient's heart or great vessel with a minimum of arterial and venous penetrations. In one embodiment, a bypass cannula (180) configured for introduction into a patient's artery includes a blood flow lumen (188) which may be connected to a cardiopulmonary bypass system (92, 94, 96, 100). A catheter shaft (202) is coupled to the bypass cannula, usually within the blood flow lumen, and has a member (216) at its distal end for performing an interventional procedure within the heart or great vessel. In a particular embodiment, the catheter shaft has an expandable member such as an inflatable balloon disposed near its distal for occluding the ascending aorta so as to substantially block all blood flow therethrough for a plurality of cardiac cycles. The catheter shaft has an inner lumen (212) through which cardio-plegic fluid may be delivered upstream of the occluding member to infuse cardio-plegic fluid into the coronary arteries for arresting the heart. The blood flow lumen in the bypass cannula is connected to a cardiopulmonary bypass system, which receives deoxygenated blood from the patient's venous system, oxygenates the blood, and delivers the oxygenated blood to the patient's arterial system through the blood flow lumen.

11/3,AB/17 (Item 17 from file: 349)

DIALOG(R)File 349:PCT Fulltext

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00270706

METHOD FOR PERFORMING THORACOSCOPIC CARDIAC BYPASS PROCEDURES

METHODE DE PONTAGE CARDIAQUE THORACOSCOPIQUE

Patent Applicant/Assignee:

STANFORD SURGICAL TECHNOLOGIES INC,

Inventor(s):

STERMAN Wesley D,  
SIEGEL Lawrence C,  
CURTIS Patricia E,  
STEVENS John H,  
MACHOLD Timothy R,

Patent and Priority Information (Country, Number, Date):

Patent: WO 9418881 A1 19940901

Application: WO 94US305 19940110 (PCT/WO US9400305)

Priority Application: US 9323778 19930222

Designated States: AU CA JP AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE

Publication Language: English

Fulltext Word Count: 6830

#### English Abstract

A method for closed chest cardiac surgical intervention relies on viewing the cardiac region through a thoracoscope (34) or other viewing scope and endovascularly partitioning the patient's arterial system at a location within the ascending aorta. The cardiopulmonary bypass (56) and cardioplegia can be induced, and a variety of surgical procedures performed on the stopped heart using percutaneously introduced tools. The method of the present invention will be particularly suitable for forming coronary artery bypass grafts, where an arterial blood source is created using least invasive surgical techniques, and the arterial source is connected to a target location within a coronary artery while the patient is under cardiopulmonary bypass and cardioplegia.

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